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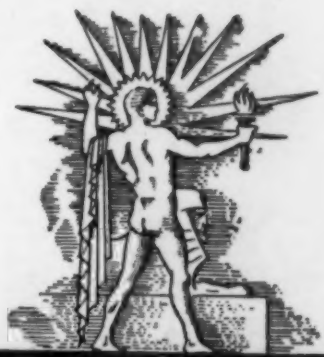
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



July 24, 1937

Book of Warning

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DO YOU KNOW?

The electric eel develops more power than any other kind of electric fish.

The fragrant scent of sweet grass was a popular perfume with Indians of the Plains region.

Dutch chemists have produced a new wool-like material rivaling the work of Italian laboratories.

High grade paper and low grade paper deteriorate about equally if exposed to sunlight, so tests reveal.

The dry cleaning industry has devised a plan whereby fabrics may be tested for cleanability before they are put on the market.

In parts of Tokyo the ground has sunk as much as three inches in a year, a condition attributed to contraction of the surface soil.

New uses for zinc are developing since this metal can now be produced 99.99 per cent. pure zinc, instead of in forms containing considerable alloy.

Typewriter ribbons are now made in aluminum color for use on dark paper.

The most desirable coolness for drinking water is about 50 degrees, according to one refrigeration expert.

Dutch scientists in the East Indies are experimenting with uses for rubber seed, as a by-product of the rubber tree.

Pepper is freely used in seasoning food in the tropics because it stimulates perspiration, thereby cooling the body.

Egypt's Coptic language, which supposedly died out centuries ago, is found to be still alive as a secret language.

A new electronic device tests whether the pitch of a singer's voice is true, by showing on a screen the singer's note and the pure note together, in visible wave form.

It has been suggested that man first seasoned his food, in Stone Age times, by licking rock salt.

WITH THE SCIENCES THIS WEEK

Most articles are based on communications to Science Service or papers before meetings, but where published sources are used they are referred to in the article.

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PSYCHOLOGY

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Where is the world's most powerful television transmitter located? p. 55.

DENTISTRY

New Dental Anesthetic Paste Prevents Pain in Many Cases

Dental Meeting Also Learns of Test for Dentifrice; Man With 52 Teeth Had To Wear A False Set Besides

A NEW paste-like dental anesthetic, which has been nearly 83 per cent. successful in preventing tooth filling pain in 361 carefully checked cases, was announced to the dental profession by Dr. Harold A. Osserman of New York City, at the sessions of the American Dental Association in Atlantic City.

The paste anesthetic mixture is applied by dentists when they are drilling into the dentin of a patient's tooth. It is especially useful when working on people with sensitive or hyper-sensitive dentin.

Dr. Osserman reported experimentation on 135 other formulae before he obtained the one he announced. The anesthetic's name is thymol aminobenzoate. He announced also the synthesis at Columbia University of a drug with comparable properties known as p-propyl m-cresol aminobenzoate, by Prof. A. Taub of the college of pharmacy, who was associated with Dr. Osserman in the work.

The new dental anesthetic has been used not only by Dr. Osserman in his private practice but in the dental clinic at Beth Israel Hospital, New York City. Perfect success was obtained in nearly 83 per cent. of the cases. Fourteen per cent. showed partial success and the drug mixture failed in three per cent. of the cases.

Dr. Fred R. Adams of New York City mentioned in a separate paper on general dental anesthetics that Dr. Osserman's new development "was one of the most successful in his own experience."

Caution Urged

Dr. Samuel M. Gordon of Chicago, chairman of the Therapeutic Council of the ADA, in discussing Dr. Osserman's anesthetic, advised caution in its widespread acceptance at the present time and until independent surveys of its clinical usefulness could be obtained.

The major criticism of all anesthetics supposed to reduce sensitivity to pain in teeth, pointed out Dr. Gordon, is that the results usually are obtained by impressions from the patient or from the dentist's impressions of pain in the patient. Actually "blind tests" are the true way to test anesthetics; tests in which the patient is not told that the anesthetic is being used and therefore can not use his imagination to develop pain, or freedom from pain. Said Dr. Gordon:

"Any product introduced for reducing the sensitivity of dentin during the commonly practiced dental procedures must be evaluated on an objective rather than an impressionistic basis. Unfortunately, many of the reports which have become available are still impressionistic. Tests under way in certain clinics indicate the new products (Dr. Osserman's) will also have limitations. Their usefulness in the hands of every dentist still remains to be determined. Even the presence of nerve fibers in the dentin is still in dispute. (The new anesthetics are designed to desensitize these supposed nerve endings in the dentin.)

"Hence, dentists would do well to apply this suggested mixture of drugs with honest skepticism until investigations in independent clinics by individuals capable of carefully evaluating such elusive data show that it reduces sensitivity in enough percentage of cases to make the preparations useful. Only tests carried out by the 'blind method' can be considered adequate."

Test Toothpaste

With a nickel and a piece of glass you can make a simple test that will tell you whether your favorite toothpaste will scratch the enamel of your teeth.

The test is one that the United States Government requires for all toothpaste purchased and it was described at the meeting of the American Dental Association by Drs. Wilmer Souder, physicist, and Irl C. Schoonover, chemist, of the National Bureau of Standards.

Uncle Sam buys large quantities of

SIMPLE TEST

Dr. Wilmer Souder, National Bureau of Standards physicist, makes the test that was given to 25 popular brands of toothpaste to discover scratching. A microscope slide with the toothpaste on it is rubbed with the edge of a piece of alloy metal the hardness of a five-cent piece. Anyone can make the test on his favorite toothpaste.

toothpaste. When an order for some 14,000 dozen tubes was contemplated, a committee was appointed to write specifications for a safe and effective cleanser for the teeth. These specifications, now adopted for use, were reported to the meeting. The committee was composed of Capt. H. E. Harvey, of the Navy Dental Corps, Dr. M. M. Fowler of the Veterans Administration, and Dr. Souder.

Safety for the tissues of the mouth and the teeth was the first consideration of these men when they met to decide what must be contained in Uncle Sam's toothpaste. Next came the question of efficiency in removing foreign materials from the teeth. Last in importance was the matter of flavor or perfume.

A toothpaste must not be excessively either alkaline or acid, it was decided. It must not be caustic. It must not contain arsenic or other poisons. It must have a preservative that will insure that it keeps in good condition until used.

Turn Down Half

Twenty-five popular brands of toothpaste were tested against the specifications as adopted for use in Government purchasing. More than half failed to meet the requirements, Drs. Souder and Schoonover said. Hardening, separation of ingredients, and fermentation or spoiling were the most common faults. Some showed signs of chemical attack upon the tube container, and that was considered undesirable.

Ten toothpastes among those tested failed on the test for scratching. This test, as developed at the National Bureau of Standards, can be used by anyone who wants to be sure his dentifrice is not scratching the enamel of his teeth. A piece of glass and a piece of alloy metal of the size and hardness of a five-cent piece are all that are needed for the experiment. First test the glass for hardness by rubbing the edge of the metal piece over it to be sure that the metal alone does not scratch the glass. Human enamel and glass both vary in hardness. The grade of soda-lime glass used in a non-corrosive microscope slide was found to be harder than any of the enamel tested at the Bureau.

Place some of the toothpaste to be tested on the glass and rub again with the coin. If scratches result, then you may expect scratches on your teeth. This test is sensitive enough to detect one part of emery in one hundred thousand parts of paste.

False Teeth Cause Deafness

Most people when they acquire artificial dentures usually feel that their tooth troubles are over. But in one case at least, reported to the dental meetings, the incorrect fitting of false teeth led to deafness that was cured only when a new set of dental plates were made.

Dr. Harold L. Harris of St. Paul, Minn., described the case history of a woman, 50 years old, who came to his office with a loss of hearing of 56 per cent. in the left ear and 57 per cent. loss in the right ear. The woman wished to have a new denture made.

The old false teeth, it was found, thrust backward the mandible of the jaw, and decreased the amount of tongue room. This in turn lessened the activity of the tongue and all its associated parts in the mouth. The muscles in the neighborhood of the ear and its intricate working parts were also affected in activity and it is believed that this created the "dental" deafness.

The new plates made for the woman increased the vertical dimensions of her mouth by about one-half inch and gave "a rather strained appearance of the patient's face due to the lengthening of the striated muscle fibers of the muscles of expression."

But whatever the patient's expression the result, in terms of hearing, was vastly improved. Immediately after getting the new dentures the patient took another hearing test and showed a 44 per cent. improvement in the left ear and 41 per cent. improvement in the right. At the end of a year hearing in the left ear was completely normal and the loss of hearing in the right was only 9 per cent.

Facilities Inadequate

Combined facilities of schools, public clinics, and private practice are not sufficient to care for the enormous number of dental defects among the people of the United States, Dr. F. C. Cady, of the U. S. Public Health Service, told the dental association in reporting the results of a dental survey of 1,400,000 school children in 26 states and another survey of dental facilities.

"Combined educational and clinical facilities of governmental and private practice are unable to cope with the high rate of dental defects among the people of this country," said Dr. Cady. "More and better methods will have to be instituted by the dental profession if the number of dental cripples is to be materially reduced."

Evidence of a 52-toothed man was shown by Dr. George B. Winter of St. Louis, past president of the American Dental Association, in the exhibits at the meeting. The normal number for the adult is 32. But Dr. Winter's X-ray shows 52 in this patient, much to his discomfort. All 52 were imbedded in the bone, some were almost microscopic in size and they had to be removed surgically. The man wore a complete set of artificial teeth, in addition.

Ancient Sufferers

Jaw bones from the Egyptian pyramids allowed Dr. Winter to demonstrate to fellow dentists that ancient dwellers near the Nile suffered from impaired wisdom teeth.

"Like men and women living today," said Dr. Winter, "the Egyptians and other ancient people evidently suffered not only the inconvenience or pain that such teeth may cause when retained, but even deafness or insanity, which have been known to result from impacted wisdom teeth."

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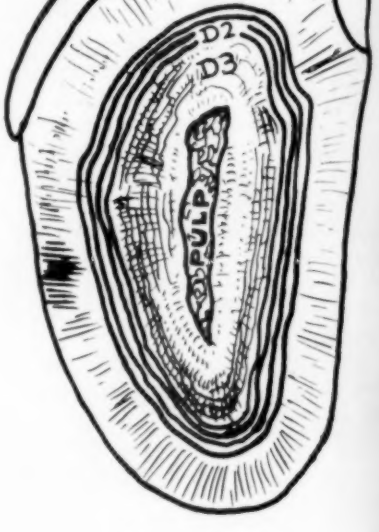

TOOTH RINGS

Drawn as seen under a microscope, the rings in a rat's tooth show a marked likeness to tree rings. D_1 shows the normal dentin just under the hard enamel. D_2 is the dentin, with ring structure, formed during experiment. D_3 is again normal dentin formed after the experiment. The four dark bands represent fluoride injections. Fourteen light and hard bands can also be counted (in original photograph) which are the daily growth rings formed during the days between the last fluoride injection and the death of the animal.

PHYSIOLOGY

Teeth, Like Trees, Show Their History in Rings

Vitamin Lack, Glandular Malfunction, Even Birth Is Shown in Rings Formed Four Days Apart in Man

WANTED: Baby teeth. Not just any baby teeth, but those with a complete medical history of their young owners.

The man who wants them is Dr. Isaac Schour of the University of Illinois College of Dentistry. Dr. Schour has discovered that teeth, like trees, carry records of their owner's growth and medical history in rings that are laid down at regular intervals beginning even before birth. He wants to investigate tooth ring records further and has been telling his doctor friends to send him the first or baby teeth of their little patients.

Mothers are warned not to send Johnny's or Susie's teeth directly but to carry on negotiations through their family physician or dentist, because without a complete medical history of Johnny or Susie the teeth will be of no use to Dr. Schour.

The tooth ring discovery was made as a result of studies of mottled enamel which Dr. Schour made with Dr. Margaret Cammack Smith of the University of Arizona. This highly disfiguring condition affects the teeth in children who drink water containing fluorine. It is a serious problem in the Southwest and other parts of the country where the only available water supply contains objectionable amounts of fluorine. In order to learn more about this condition, Drs. Schour and Smith gave fluorine to rats, either in the diet or by injection and then studied the animal's teeth.

Injections Show

Every injection of fluorine was followed by a typical mark on the rat's teeth, they found. Rats' teeth are particularly useful for such studies because the large incisor teeth continue growing throughout the animal's life. As Dr. Schour expressed it, these teeth "roll along like ticker tape," carrying on them the record of the fluorine injections and, as he subsequently found, of other events in the animal's medical history.

The regularity of the markings interested Dr. Schour, and he next injected a red dye called alizarin. As in the case of the fluorine, every injection was recorded by a marking on the teeth. When the teeth are sectioned or sliced up horizontally, these marks are rings, looking like the rings that tell the age of a tree.

Studying these teeth, Dr Schour found there were other rings besides those of the dye injections. These also were at regular intervals and spaced at a distance of 16 micra from each other. One micron is one twenty-five thousandth of an inch.

Tree rings are annual records of the tree's growth, one ring forming every year. In the incisor of the rat, teeth rings are daily records, one tooth ring forming every day, but in man and monkeys, which grow more slowly, the tooth rings are spaced four days apart. This difference just about corresponds to the difference in the rates of growth of rats and men. The rings are not visible to the naked eye. Special preparation makes them visible under the microscope.

Neonatal Ring

One special tooth ring is called the neonatal ring because it is formed at birth. Birth is such a tremendous experience in the life of an individual when the change is made from a dependent to an independent life, that it is not surprising, Dr. Schour explained, that it leaves a definite mark—a sort of birth certificate—on the teeth. This birth ring appears in the portion of the baby teeth that was forming at the time of birth and makes it possible to compare the amount and quality of the tooth before and after birth.

Other experiences are also recorded on the teeth. One child had convulsions at one year of age, due to underfunctioning of the parathyroid glands. These glands play an important part in the calcification or hardening of bones and teeth and due to their underfunctioning left a mark on the child's teeth. Special rings were formed at the time of the convulsions.

The teeth rings show in both enamel, the hard outer covering of teeth, and the dentin, which is the inner part.

THE BANDS SHOW UP

Injection of sodium fluoride every 48 hours made the bands seen on the teeth.

Starting from the fourth month before birth, when the teeth begin forming, until the sixteenth year of life, there is always one tooth or another, Dr. Schour said, which records what is going on in the body. If certain glands (pituitary, thyroid or adrenals) do not function properly, or if the diet is lacking in vitamin A, C, or D, definite and characteristic changes may be found in the teeth. These have been observed in rats and Dr. Schour wants to investigate human teeth to see how they show body disturbances. That is why he wants baby teeth with complete medical histories of their young owners.

Tree-ring analysis has given scientists information about weather conditions in past centuries and the age of pre-historic buildings in Southwestern America as well as the age and history of the trees themselves. Tooth-ring analysis will be equally valuable, Dr. Schour believes, in giving information about the medical and biological history of an individual.

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A new valve device is intended to prevent buses and trucks from giving off waves of smelly gas when the driver takes his foot from the throttle.

Rubber trees have stood several winters in southern Florida, where government scientists are testing wastelands to see if they might be useful as a rubber reserve, in times of military or economic shortage of rubber.

11 TO 1937

Dr. A. E. Douglass, University of Arizona's noted astronomer, has reason to smile at his tree ring calendar, which stretches way down the wall to the right. After 36 years, he has obtained a continuous record of annual growth rings in Arizona pine trees from 11 A. D. to 1937. Evidence of weather cycles related to solar phenomena, revealed in the rings, should lead to long range weather prediction, he believes. Archaeologists use the tree ring calendar to establish dates for prehistoric Indian ruins—the earliest so far dated 348 A. D.

ENTOMOLOGY

Aerial Attacks By Hoppers Bring War Into New Areas

By WATSON DAVIS
Director of Science Service

DANGEROUS aerial attacks by flying grasshoppers are predicted for middle western states about now. (July 25). Out of the skies are likely to come great hordes of this insect pest, now in its flying or aviation phase, traveling with favorable winds hundreds of miles in a single day. This is likely to bring the grasshopper war into fields of farmers who thought they were safely remote from the battle front they had heard about miles away.

Despite this new phase of science's battle against the plagueful hoppers, Dr. W. R. Walton, senior entomologist of the U. S. Department of Agriculture's bureau of entomology, is feeling fairly well pleased with the defense being waged against these insects. As he checks his insect war plans, consisting of tables showing allotments of poison purchased with the million dollars appropriated this spring by Congress, he finds that the most serious foe is aligned from Arizona to the Canadian border.

This kind of grasshopper—locusts to the entomologist—is the lesser migratory locust, technically known as Melanoplus mexicanus. Some entomologists think it is an evolution of the old Rocky Mountain locust of years ago. The present variety is very much the same except that its wings are shorter.

This pest is just now getting to be grown-up and with this adulthood comes its dangerous ability to fly.

Front line reports from Dr. J. R. Parker, Uncle Sam's representative in the Colorado grasshopper war area, bring Dr. Walton the pleasing news that the strenuous poison warfare against that infestation of another and larger kind of hopper is proving successful. Enough arsenic poisoned bran and sawdust has been mixed and spread to secure very good control in that general locality—which is justification of the strenuous fight whose beginnings I saw in the field several weeks ago. (See SNL, July 10.)

Just now the bottom of the war chest of a million dollars is being scraped to keep poison flowing to the fighters in the field and there is hope that Congress will further implement the grasshopper war with an additional appropriation of $500,000 to $1,000,000. The U.S.D.A. original estimate of $2,000,000 needed for this year's war was halved by Congress when it appropriated this spring.

This money is spent for poison, sodium arsenite, which states and counties mix with sawdust and bran and spread thinly as bait in the path of the hoppers. Millions are killed in this way.

Grasshoppers are rated among the most destructive of insect pests, not only in America but throughout the world. They strip bare the fields upon which they light and they are partial to the juicy corn that is now swelling to bumper proportions in the fertile fields of our agricultural midwest. One peculiarity has the bug-hunters puzzled. The grasshopper does not like sorghum, although it is a near relative to corn. He will pass up a field of it and devastate all other crops nearby.

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ETHNOLOGY

Basque May Have Been Language of All Spain

BASQUES have figured prominently in the news of late, especially in their protracted defence of Bilbao and in the stubborn resistance they continue to offer the insurgent forces. The very fact that their unique language seems to set them apart from all the rest of the world casts glamor over their wars.

The Basques themselves have always insisted that their language marked them as a race apart from all other inhabitants of Spain. But a writer in the quarterly journal *Thought,* Dr. Owen B. McGuire, is not so sure about that.

Indeed, Dr. McGuire, who has had a seventeen-year resident in pre-revolutionary Spain says:

"Who the Basques are and where they originally came from is a problem 'in a state of well-ascertained and scientific ignorance.' But that is true of all the people of Spain."

The Basques themselves do not like the suggestion that in ancient times their language covered the whole Iberian peninsula, but due to recent research by a noted German scholar, Dr. W. H. Schuchardt, "it is today considered the most probable solution of the problem."

Dr. McGuire upsets some rather widely accepted ideas about the Basques. They are not a unified people, he points out, and they never were. They have always been more interested in preserving a whole host of small local autonomies than they have in a large nationalism, either of all Spain or even of their own racio-linguistic group.

Nor are they proudly self-conscious of their language. Less than half the persons in the Basque provinces know Basque, and a great many of them do not habitually use it. The most popular Basque newspapers are published in Spanish. In brief, the situation is not unlike that in Ireland, where the native language has been "revived" by rather artificial means.

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ASTRONOMY

Finsler's Comet Will Grow In Brightness For Next Month

Can Now Be Seen Without Optical Aid; With Pair of Binoculars, Small Tail Might Be Observed

FINSLER'S comet, found by a Swiss astronomer on July 4, has now reached naked eye brilliance in the northern sky, and by mid-August will be as bright as Megrez, the star in the Big Dipper where the handle joins the bowl. At that time it will be passing above the dipper and through the stars of the handle.

Just now the comet is in Perseus, a constellation which can be seen low in the northeast, under the W-shaped group of Cassiopeia, about midnight. It is just bright enough to be seen as a fuzzy spot of light without optical aid if the sky is very clear and free from smoke and glare. A small tail has been observed by astronomers, and this might be seen with a pair of binoculars, which will help in locating the object. Its distance is about 110,000,000 miles, but in August it will be less than half as far away. As it approaches, the tail will increase in prominence. About August 15 it will be nearest the sun, at a distance of about 79,000,000 miles.

Curiously, it was just a year ago that Peltier's comet shone in the evening sky, the first to be seen easily without a telescope since 1910. Finsler's is better placed for viewing, however, for last summer the moon was full at the time the comet was brightest, thus spoiling the spectacle to a large extent. Next month the moon will not appear prominently until about the tenth, and it will not be full until the 21st, by which time the comet, near Arcturus, and high in the western sky, will have begun to diminish in brilliance.

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ASTRONOMY

Legend of Seven Pleiades Gets Astronomical Support

SCIENTIFIC corroboration of a world-wide legend, rooted in ancient mythology, that once the six resplendent star "sisters" of the Pleiades numbered seven, was offered by Dr. William A. Calder, of Harvard Observatory.

The star "Pleione," identified by astronomers as "Number Seven" of this group, has been suspected in the past as the mysteriously disappeared sister, and careful comparative measurements of stellar magnitudes in this region by Dr. Calder tend to confirm this suggestion, it was reported.

Pleione was observed to diminish in light about a sixth of a magnitude in a slow continuing decline during the winters of 1935-36-37, Dr. Calder says. Before this investigation, slight changes in the brightness of certain members of the group had been suspected but seldom proved.

In this study, Harvard cameras utilized a potassium-hydride photo-electric cell, permitting very exact detection of slow or minute variations in the star light. In all, the relative brightness of twenty-five of the most conspicuous stars in the Pleiades region were observed during the three winters of the survey.

Dr. Calder's report included a reminder, which he did not elaborate, that the spectrum of Pleione formerly had emission lines and resembled that of P Cygni, a star that was at one time a nova. In recent years, he said, the bright lines of Pleione have disappeared.

"That some change has taken place in the Pleiades is borne out by tradition," Dr. Calder said. "Almost all nations of the earth have legends about the 'seven who are now six.' The surprising universality of this impression is difficult to explain unless a now diminished seventh Pleiad formerly was conspicuous."

Six Pleiades are normally visible to the unaided eye, but under exceptional conditions double this number have been noted. Telescopes reveal a population here of several hundred stars which for the most part are members of a physically related aggregation, as is shown by a general unanimity of motion.

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RADIO

Paris To Have Powerful Television Transmitter

THE WORLD'S most powerful television transmitter is now in limited service at the Paris Exposition, reports the U. S. Bureau of Foreign and Domestic Commerce.

By fall the peak power of 30,000 watts is expected to be available. Transmission of television pictures from the Eiffel Tower antenna will give a definition of 405 lines to the picture.

Recent demonstrations of television in America have shown a definition of 441 lines to the picture but the power of transmission has been less than the 30 kilowatt effort of the French.

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London's famous clock Big Ben was in error by as much as a second on only five days during the past year, says a report of the Astronomer Royal.

CLIMATOLOGY

Scrolls Without Writing Tell of Floods and Sun

See Front Cover

SCROLLS without writing, yet eloquent in protest against outrage done to the land, and in warning of doom to come unless we presently mend our ways, can be found on any flatland after inundation, when the sun has had time to bake the thin layer of glutinous mud and crack it and curl the edges. For every flooding a new layer is added, until they are piled like the leaves of a book, as shown on the front cover of this week's SCIENCE NEWS LETTER. All the bottomlands of the country have whole libraries of such warning volumes.

This particular one was read and pictured by a high school student, Clarence Tripp of Corsicana, Texas.

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PHARMACY

Drugs Must Keep Potency As Well as Be Made Right

MAKING drugs right, so they meet standards of purity and potency, is only half the pharmacist's or manufacturing druggist's job. The other half is to make drugs which will keep their potency. The importance and some of the difficulties of the problem can be illustrated by the following research.

Digitalis tinctures, on which many heart disease patients depend for their very lives, lost from 10 per cent. to 50 per cent. of their strength within a year, tests on frogs showed. Yet many of these same tinctures when tested on cats showed no loss of strength, Dr. H. H. Haag, professor of pharmacology at the Medical College of Virginia, has found.

Further data on this important problem of the deterioration of digitalis has been obtained by Dr. James C. Munch for the American Pharmaceutical Association. Fifty gallons of a tincture were made and bottled under commercial conditions for this research. Tests every 3 months for 2 years and then once a year for 7 years were made. For 3 years the tincture lost from 10 per cent. to 15 per cent. of its potency every year. Then the potency stood still for several years, followed by an increase in strength. This "old" tincture of digitalis was found uesful when given to patients needing the drug to save their lives.

Ragweed and timothy pollen extracts are used in testing for hay fever and asthma and also for treating these conditions. Dr. Herbert M. Cobe, of Temple University, found that strong pollen extracts lose their strength within 6 months to a year when stored at ice-box temperature. When stored at room temperature for a year or two the material is apt to be worthless.

These and similar problems were discussed at a recent symposium of the Pennsylvania Pharmaceutical Association.

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PHYSIOLOGY

Balance of Hormones Times "Blessed Events"

IMITATION pregnancies produced in experimental animals by small pellets of paraffin are yielding new light on the delicate balance of the animal body during the growth of the embryo. In addition, the roles played by the two hormones—progestin and oestrin—receive new significance in view of a report by Dr. S. R. M. Reynolds of the Long Island College of Medicine to the biological symposium at Cold Spring Harbor, N. Y.

Dr. Reynolds attacked one of the basic problems of embryology in a unique manner. Tiny cylinders of paraffin were anchored in the uterus of a rabbit whose ovaries had been removed. Suspecting that these paraffin pellets might have a stimulating, or irritating effect on the walls of the uterus the rate of growth of the walls was carefully measured.

When the pellets of paraffin were too small no growth occured. There was no stimulation to growth. When the pellets were too large, also, there was no growth. In this latter case it is believed that excessive stretching of the walls cut off some of the blood supply and thus limited the available food to the tissues.

For the special and rather critical size of pellet, however, a growth of the walls of the uterus occurred just as it would during real pregnancy.

In a rabbit undergoing this imitation pregnancy, Dr. Reynolds found that injections of the so-called female sex hormone stopped the growth of the walls of the uterus. In contrast, progestin, given off by the follicles which have liberated eggs seemed greatly to sensitize the tissues and promote their growth.

Thus nature seems to provide within the mother, during the development of the embryonic rabbits, a device that at first will allow growth to meet the increase of size and then finally will stop the growth of the uterus so that it no longer is able to retain its contents. In real life birth then follows.

Science News Letter, July 24, 1937

IN SCIEN

PSYCHOLOGY

"Psychic Inertia" Makes You Like Old Ways Best

THE evening was hot. Fifteen girls were seated about a table copying sentences from books to the accompaniment of the monotonous beat of a metronome. Tick, tick, tick, the seconds were tolled off; one tick a second.

Fourteen of the girls were dressed warmly in smocks over their dresses, a living perspiring demonstration of what a psychologist has termed "psychic inertia." For ten evenings they had sat at their warm tasks. They had been required to wear the smocks despite complaints. Now, on the tenth evening, they were told that the smock might come off. But, so strong is the tie that binds us to the familiar, only one girl removed the extra garment.

Psychic inertia, Dr. A. H. Maslow, of Teachers College, Columbia University, the experimenter, tells us, is not at all the same as laziness. In fact, it might almost be thought of as the opposite. Often people will go to a great deal of trouble because of their preference for the familiar.

Used to working with pens, these girls would scorn proffered pencils even though writing on sponge-like mimeograph paper. They would laboriously copy whole sentences because they had been doing so, even though told that single words would serve the required purpose as well.

Ostensibly, they were participating in the measurement of effects of distraction. Hence the metronome beat, other noises and frequent changes of work. None of the subjects knew the actual purpose of the experiment.

Striking was the preference for the familiar. Old seats, accustomed kinds of paper, even the presence of the metronome's annoying beat were desired. Familiar pictures were rated more beautiful; familiar names more euphonious.

And the subjects used in this experiment were not old men, not court justices, they were young college students.

Such is psychic inertia.

Science News Letter, July 24, 1937

...NE FIELDS

MEDICINE

Warn Against Castor Oil For Children With Bad Pain

MOTHERS, don't give the baby castor oil when he has a severe abdominal pain without the advice of a physician. If he happens to have appendicitis, the cathartic will increase and hasten the progress of the disease.

This oft-mentioned warning receives new emphasis from a study of 612 children with appendicitis treated at the Children's Surgical Service at Bellevue Hospital during the ten years from 1926 to 1935 inclusive, and just reported to the American Medical Association by Dr. Philip D. Allen, of New York.

More than half the children (57 per cent.) in the group in which perforation of the appendix had occurred, had received cathartics. In the unperforated group, 42 per cent. had also been given such medicine. Most of these children were found lying with their thighs flexed on the painful abdomen.

Acute appendicitis is comparatively infrequent in children under five years of age and increases in frequency with each year of age. The death rate is very high for the infants, however, due to the fact that appendicitis is so difficult to diagnose in babies and because infants have very little resistance to the infection.

The death rate is greatly increased by delay in operation, Dr. Allen found.

Science News Letter, July 24, 1937

HYGIENE

Heat, Soap and Water Are Disinfectants

STANDING between man and his deadly enemy, the disease germ, are the chemicals and other agents known as disinfectants, antiseptics and germicides. These substances have the power to destroy the germs that cause disease.

"Their value is hard to overemphasize," declared chief chemist William F. Reindollar of the Maryland State Department of Health in a recent talk.

Father of chemical antiseptics is carbolic acid, also called phenol. This powerful and dangerous chemical was used by Lister to keep germs out of wounds during operations and it is still the standby of modern operating rooms.

Scientific disinfection or germ destruction began with Pasteur and Lister, but attempts at disinfection were made long before that. Burning aromatic substances in the sick room was once thought to be a means of checking disease spread, and fourteenth century physicians advised vinegar as an antiseptic to combat the plague.

One very effective germ killer is heat. Simplest method to disinfect water is to boil it and this measure is always recommended by health authorities if there is any suspicion that drinking water may be polluted with germs. Milk is disinfected or freed of dangerous germs by pasteurization, a heat process in which the milk is kept at a temperature of 142 degrees Fahrenheit for 30 minutes.

Soap and water generously applied with plenty of elbow grease is a homely process with much germ-killing power. By this method disease may be checked prosaicly at the kitchen sink. More dramatic is its use by nurses and surgeons who scrub to the elbow before a surgical operation.

Chlorine is an excellent disinfectant, used to purify drinking water in many communities. Chloride of lime and carbolic acid are valuable for disinfecting sickroom utensils, drains and sinks. These substances are poisons which should be handled carefully and kept beyond the reach of children.

Simple home disinfectants are boric acid for eye washes, antiseptic solutions for gargles, and tincture of iodine for small cuts and scratches.

Science News Letter, July 24, 1937

SEISMOLOGY

Earthquake Center Found Off Mexican Coast

THE CENTER of a moderately severe earthquake on Sunday, July 11, was located about 200 miles off the west coast of Mexico. Seismological reports to Science Service from Weston College Observatory, Weston, Mass., Georgetown University Observatory, Washington, D. C., and Coast and Geodetic stations at Tucson, Ariz., and Honolulu, T. H., analyzed by the U. S. Coast and Geodetic Survey, put science's finger upon this shock. (Location of epicenter: Probably 21 N; 109 W. Time: July 11, 12:19.4 p. m. EST.)

Science News Letter, July 24, 1937

ASTRONOMY

Changes in Moon Mountain Suggest Presence of Haze

WHILE astronomical findings indicate that the moon is lifeless and, indeed, probably without an atmosphere, there are some matters of lunar topography that need more explanation. Appearing in *Popular Astronomy,* published by Goodell Observatory of Carleton College, are drawings made of mountains on the moon which show changed markings from time to time that must be attributed to something—haze, melting snow, or jets of steam.

Pico, an 8,000 foot peak on the moon, was the mountain chosen for study by G. O. Rawstron, amateur astronomer of Liverpool, England. Some 48 drawings of the mountain, made with a four-inch diameter telescope, show that light and dark areas on the lunar mountain vary from time to time.

"It cannot be over-emphasized," states Mr. Rawstron, "that it is practically impossible to reconcile these changes with the effect of the varying angle of illumination. There are certain markings which actually darken as the lunar midday approaches; certain others vary considerably in shape and size during the course of a lunation (the interval between consecutive new moons).

"Most striking of all, however," adds Mr. Rawstron, "are those areas which undergo an irregular change in appearance from one lunation to the next—that is to say, which do not present the same aspect at similar colongitudes."

The most conspicuous marking observed is a white area which spreads out from the northeast corner of the mountain and extends over a great plain, known as the Mare Imbrium, for about 22 miles. Whether this is a haze or a jet of steam of perhaps volcanic origin is unknown, reports Mr. Rawstron.

Prof. W. H. Pickering, emeritus professor of astronomy at Harvard College Observatory who now, at 79, maintains a private observatory at Mandeville, Jamaica, has been one of the leading scientists who have noted such similar changes in the markings on the mountains of the moon.

The choice of the mountain Pico for study by Mr. Rawstron was, in fact, due to an earlier study of the same mountain by Prof. Pickering.

While the new drawings differ slightly in appearance from those made by Prof. Pickering, the major features of change are substantiated.

Science News Letter, July 24, 1937

PSYCHIATRY

Mental Hay Fever

A Mother-In-Law May Give Certain Supersensitive Persons Spasms Just As Ragweed May Cause Sneezing

By MARJORIE VAN DE WATER

MAYBE you know someone who can't get along with his mother-in-law. The very mention of her name will start a tirade. If she shows up at his house, he is thrown into a fit of emotion that spoils his whole day.

A new explanation for this mother-in-law trouble is offered to scientists by Dr. Wallace Marshall, a psychiatrist of Appleton, Wisc. He says that it is a kind of "hay fever" of the mind.

"Mental hay fever" has nothing to do with the pestiferous ragweed that throws the unfortunate into paroxysms of sneezing when they breathe its fine pollen. But a mother-in-law can irritate the mind of certain especially sensitive persons in a way closely parallel to the manner that certain pollens irritate the breathing tracts of others, Dr. Marshall says.

He traced the parallel in a report to the American Journal of Psychiatry where he introduced it to his fellow scientists as a long-sought link between the mind and the body—between biology and abnormal psychology.

In the case of hay fever itself, bombardment by pollen will sensitize the victim so that thereafter the least whiff of that pollen will start a fit of sneezing. In a comparable way, Dr. Marshall explains, overexposure to an irritative mother-in-law may make a person supersensitive to irritation from that source. Thereafter even a slight reminder of her is enough to bring on a fit of rage.

One Cause

In both cases, it may be just the one irritant that causes all the trouble. The father-in-law, for example, may not precipitate any violence any more than daisies cause hay fever.

The hay fever victim can be relieved of his symptoms by a process of desensitizing. He is given gradually increasing doses of the pollen in the form of injections until he is taking it in such large amounts that he is rendered immune to the ordinary irritation of pollen-laden air.

Similarly, the son-in-law can desensitize himself in regard to the mother-in-law, Dr. Marshall encourages. Or he can gain "immunity" through the service of the physician dealing with nervous diseases.

With body and mind alike it is not just the one single irritant that may cause trouble. Although it may be only one that affects any one person, a great variety of irritants claim their own individual victims. Plant pollens are the most familiar of these irritants to the body—allergies as they are known to the physician. But some persons are sensitive to certain foods such as shell fish, eggs, strawberries, and even wheat and spinach. These persons have intestinal upsets or hives whenever they eat the offending food.

Heat and Cold

Other persons are allergic to heat or to cold. Some can't stand the touch of fur. Others are bothered by fresh paint. Face powder will make some individuals positively ill. The goo put on hair to make it slick or to set waves is poison to a few persons.

So it is too with the "psycho-allergies" as Dr. Marshall calls such special irritations in the field of the mind. The mother-in-law is only an all too familiar example of a very numerous group. Each person probably has built up his own peculiar set of "psycho-allergens" which cause him fits of mental hay fever. Here are a few cited by Dr. Marshall.

The stutterer. "The respiratory embarrassment which the stutterer suffers is a psycho-allergic reaction which may have inferiority as its basis," he says.

The drunkard. "The dypsomaniac," says Dr. Marshall, "seeks a flight from reality in liquor. He does not drink for the sport of drinking; he imbibes because he needs a retreat from the definite psychoallergens to which he has developed a state of hypersensitivity."

The criminal who loses his nerve. A killer who disposes of those in his way without the slightest sign of an emotion may develop a sensitive period and lose his nerve completely, Dr. Marshall indicated.

The person who faints at the sight of blood. Such fainting can be traced to a specific emotional upset caused by a specific psychoallergen.

You will undoubtedly think of other similar examples, from your own experience, of "mental hay fever." You may have seen a man fly into a rage whenever a certain subject was mentioned. The rage seems completely inexplicable unless you know the background for it. If you happen to know that vacations are a perennial subject for wrangling between that man and his wife you would understand why he turns purple when some stranger asks where he spent the summer. Or, if you knew that he once lost a small son by drowning, you would realize why the mention of boating might make him turn pale.

The physician dealing with mental ills can discover his patient's psychoallergens with the word association test—the same one that is sometimes used with the "lie-detector" to trap a person suspected of crime, Dr. Marshall indicated. In this test, the physician speaks a word and the patient quickly answers with the first word that pops into his mind. Thus, if he says "hot" you might answer "August" or "stove" or perhaps even "cold." Among a lot of such unimportant words certain key words are introduced designed to detect the guilt of the suspect or the psychoallergens of the patients. The word "blood," for example, may cause a person if he is emotionally affected by that word, to delay his answer and make the "lie detector" record a tell-tale change in the electric potential of his skin. Only certain words will make the subject produce the betraying record. He is upset by them because he has previously become sensitized to those particular words. They have become for him psychoallergens, Dr. Marshall explains.

Partly Heredity

Why do persons develop these psychoallergies? Or, why do persons have the physical allergies, for that matter? Those are questions for which physicians and other scientists are still seeking satisfactory answers. It seems to be partly a matter of heredity—we appear to get from our parents either a tendency to be hypersensitive or to be immune. And it is partly a matter of exposure. Such

sensitivities seldom develop toward irritants that are rarely encountered.

In England, it is said that hay fever patients are more likely to be sensitive to the pollen of grasses than to that of ragweed. In the United States, ragweed is the chief offender. Ragweed is rare in England, an extremely common plant in the United States.

So, presumably, it is with the psychoallergens. It is the poor fellow who lives with the wife's mother who is most likely to develop "mother-in-law fever."

Abnormal Susceptibility

Allergy is simply a condition of abnormal susceptibility to something which is perfectly harmless to another person. The old adage that "What is one man's meat is another man's poison" applies admirably here. The allergic person is that other man. How does he "get that way?" Well, that is a long story and is tied up with a related question concerning the development of immunity.

If a living cell is injured, the result is either repair of the damage or death of the cell. But that is not the whole story, Dr. Marshall points out. If the repair process once starts properly, Nature does not lie down on the job. She not only repairs the damage, but produces much more of the repair material than is needed. The surplus repair parts are discharged into the blood stream. These are called antibodies. They give the body protection against later infection by the same injurious substance.

Thus the final step in this process is protection or immunity. But a preliminary stage, before the antibodies are produced, is one in which the body has an increased susceptibility to the virus.

Decreased resistance to infections or allergens also has been noted following excessive strain and chilling. Likewise, emotional upsets have a tendency to weaken the resistance of the body, Dr. Marshall points out.

Linked With Emotions

The connection between the emotions and the allergies is interesting in connection with Dr. Marshall's theory of psycho-allergies.

In the first place, the allergies affect generally the breathing apparatus as in hay fever or asthma, the digestive apparatus as in nausea or sick headache, or the skin as in hives. These are matters controlled by the involuntary nervous system. And in turn, they are controlled by the endocrine glands and the emotions.

The involuntary nervous system includes what is known as the vagus system of nerves which control the contraction of the involuntary muscles. The person with asthma suffers because the smooth muscle surrounding the bronchial tubes contracts and interferes with breathing. The person with hives has an outpouring of serum from the minute blood vessels of the skin. The person with sick headache has "hives of the brain" or a spasm in the blood vessels there.

Emotion can bring on an attack of asthma in an asthmatic person. Even in others it can produce that "heart in the throat" feeling which interferes with correct breathing. That emotion can produce headache is well known to most persons. It is by upsetting the working of the glands and involuntary nervous system that it can produce these and other allergic symptoms.

In the Psycho-Allergic

And, just as the emotions play their part in the physical upsets of the allergic person, so the body's mechanisms are disturbed by the emotional upsets of the psycho-allergic person. Ulcers in the stomach, contractions of the intestinal apparatus, high blood pressure—these are a few of the physical disturbances believed to have their origin, or at least their aggravation, in emotional upsets.

Emotion changes the blood pressure, interferes with digestion, disturbs the heart action and causes marked changes in the action of the endocrine glands.

Psycho-allergy really seems like just another face of the familiar coin of physical allergy.

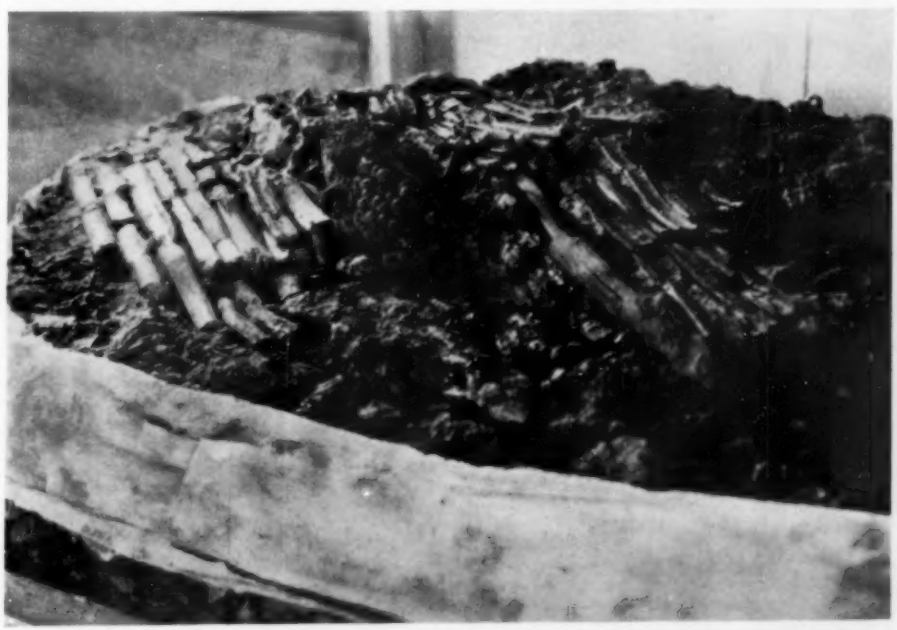
Modus Operandi

"How does an individual become hypersensitive?" asks Dr. Marshall, and then proceeds to answer.

"It seems that the modus operandi is the same in psycho-allergy as it is in the field of allergy. A person may be immune congenitally to certain psychoallergens; furthermore, he may be able to desensitize himself to them, which is another way of stating that he effects a sublimation or compensation according to the concepts of Freud.

"Thus, an individual may become hypersensitive to a particular subject which acts specifically as a psychoallergen upon that individual; likewise, he may undergo desensitization by himself by means of the above mentioned processes, or he may be desensitized through the method of psychoanalysis."

The newborn baby whose emotions have never been excited is not psychoallergic, Dr. Marshall continues. But if he is subjected to some sort of emotion arousing situation, then he may grow into a state of hypersensitivity. This is like that period of hypersus-



PREHISTORIC CORN CRIB

Part of the huge hoard of Indian corn unearthed under the floor of an Indian dwelling at Wickliffe, Kentucky (SNL June 12, page 377). Robert McCormick Adams, archaeologist who is exploring the site, has found a flint hoe left by the Indian farmers outside the house.

ceptibility that the immunologists describe—that time before the antibodies of protection develop when the organism is particularly susceptible. His emotional system is then defenseless against the onslaughts of the particular situations or objects that are his particular psychic poison.

Similar sensitizing processes occur in every psychic conflict, Dr. Marshall says.

Any agent that is capable of stimulating an organism so that it responds must be thought of as being capable of producing a state of susceptibility in the organism, he concludes. It is just as logical, he argues, to think of an idea or a word or a person or any other psychological agent as capable of producing susceptibility as it is to think of a virus or a pollen as doing so.

Science News Letter, July 24, 1937

PUBLIC HEALTH

No Diphtheria Deaths In Six American Cities

SIX large American cities have the proud record of no deaths from either diphtheria or typhoid fever during the past year.

These honor cities are Cambridge and Somerville, Mass., Syracuse and Utica, N. Y., Duluth, Minn., and Salt Lake City, Utah. Nineteen cities had no deaths from diphtheria during 1936 and 18 had none from typhoid.

The Journal of the American Medical Association announced its annual survey of diphtheria deaths in the 93 cities from which it has obtained death rates for the last 14 years.

Back in 1923, when these surveys began, the average mortality rate from diphtheria was 13.13 per 100,000 population. Today it is 1.51 per 100,000, owing to the preventive programs that have been instituted throughout the country.

In Oklahoma, Texas, and Louisiana, the health picture is not quite so bright as elsewhere. In diphtheria, as in typhoid fever, these states continue to have higher death rates than those of any other section of the country.

Dallas, Tex., with a death rate of 7.3 per 100,000, had the worst record of all large cities. Along with El Paso and Oklahoma City, Dallas reported more diphtheria deaths than during the previous year.

Tulsa, Houston, and New Orleans showed slight decreases in diphtheria death rates. Fort Worth and San Antonio had a very creditable drop in mortality from the disease over the previous year.

The 19 cities that had no diphtheria deaths during 1936 are as follows: Albany, Rochester, Syracuse, and Utica, N. Y.; Cambridge and Somerville, Mass.; New Haven, Conn.; Wilmington, Del.; Elizabeth, Newark, and Trenton, N. J.; Erie, Pa.; Grand Rapids, Mich.; Duluth and St. Paul, Minn.; Kansas City, Mo.; Salt Lake City, Utah; Spokane and Tacoma, Wash.

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BOTANY

"Lost Battalion" of Rare Trees Rediscovered in Florida

NEARLY extinct, discovered a half-century ago, lost, now found again. Such is the checkered career of a "lost battalion" of rare trees in northern Florida, reported by Prof. Herman Kurz of the State College for Women to the Florida Academy of Sciences, to be published in the next volume of that body's *Proceedings*.

The trees belong to the genus *Torreya* or *Tumion*, which is a conifer that looks somewhat like a yew. In fact, its full name, *Torreya taxifolia*, means "yew-leaved Torreya." Because of its odorous leaves and wood, it has borne such English names as stinking cedar and polecat wood. It has also been nicknamed gopher wood — possibly an allusion to the reputed material of Noah's Ark! But lately the old folk names have been giving way, partly, to the scientific Latin, so that to scientists and the general public alike it may eventually have the same name.

In earlier geologic times the genus was worldwide in its distribution, but during the Ice Age it was cut down to a few relict patches—one in Florida, larger ones in California, Japan, and China.

The Florida Torreya trees, a distinct species, are found mainly in a small block of land just east of the Appalachicola river in the north part of the state. In the books all the trees are declared to be on the east bank of the river.

However, in 1885 a noted Southern botanist, Dr. A. W. Chapman, found a few trees about half a dozen miles west of the river, and so reported in one of his publications. When so few individuals of a species exist, the discovery of even a dozen new ones is a matter of some importance. But the find was lost sight of, and from then until now apparently has never been mentioned.

A short time ago, one of Prof. Kurz's students, Mrs. Carrie Yon Williams, obtained for her teacher some specimens of the old, forgotten "lost battalion" west of the river. Prof. Kurz has since visited the locality and studied the trees in detail.

There are about 60 of them, ranging in height from 18 inches to 30 feet, scattered over about an acre of ground. Their assorted sizes constitute evidence that the trees are reproducing, an encouraging sign for their survival. Mixed with them are larger trees, mainly magnolias and beeches—a common timber type in northern Florida.

The locality is now known as Dog Pond, near Lake Ocheesee. In Dr. Chapman's time it was more romantically designated as Cypress Lake.

Prof. Kurz, in addition to sending a technical report of the discovery to the Florida Academy of Science, has deposited a specimen of the Torreya in the herbarium of the Florida Agricultural Experiment Station at Gainesville.

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ETHNOLOGY

Eskimos Could Write, Frenchman Believes

PERHAPS in future we should speak of the learned Eskimos.

A French scientist has announced that Alaskan Eskimos could read and write. He rates them as equals in culture with the ancient Chinese and Egyptians.

This scientist, Andre Leroi-Gourhan of the Museum of Ethnography of Paris, regards the pictures Eskimos engraved or carved on their belongings as a true system of writing. That is, Eskimos used the pictures as conventional signs by which they recorded their acts and intentions, for others to read.

He suggests that Eskimos began by making pictures of their sign language. The sign for beaver was putting two fingers in the mouth indicating teeth. Eskimos learned to recognize drawings

of such gestures, or of objects, just as they recognized gestures of a real person.

Ivory bow-drills, used in boring holes and in fire making, were so elaborately covered with neat rows of this picture writing that they became veritable books, on which sagas of exploits were told.

An outstanding usefulness of the writing, cited by the French scientist, was for visiting cards. Eskimo visiting cards were left for visitors—not by them. When a tribe vacated its winter village for the summer one, for example, it might leave a posted plaque engraved with instructions for following the group. Often the visitors who came were stranded travelers, or relatives driven from their own homes in some famine. Reading and writing were thus matters of life and death.

M. Leroi-Gourhan believes the Eskimos have been taken for granted as poor primitives whose disappearance would mean nothing to human civilization. Their ancient art recently surprised archaeologists who unearthed fine examples. Now they are candidates for new honor, as men of letters.

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PHYSICS

Scientists Study Disorder to Learn of Structure of Solids

A FEW years ago when scientists gathered to discuss the possible structure of solid matter they dwelt in great detail on the orderliness of things. Now, however, they are studying the disorder of matter as a key to its structure, it was revealed at the symposium on the structure of metals held at Cornell Universtiy.

Crystal structure, with its regular arrangement of atoms is now fairly well understood, Prof. John C. Slater of Massachusetts Institute of Technology indicated in his introductory remarks to the highly technical sessions. But the more scientists study real solids like metal alloys the more they find them differing from the idealized crystal states that they can interpret so well.

Thus, said Prof. Slater, the emphasis is on studies of disorder. In fact, the mathematical physicists have introduced a new concept into their calculation, the degree of order or disorder which a given material may have. This searching for knowledge in chaos, as it might be termed, complicates the discussion of phenomena and increases mathematical difficulties but it has had the net effect of finding out more about solid structure. In analogy mathematics has called up additional symbolic reenforcements as the going became harder.

In solids it appears, indicated Prof. Slater, that there is both a long range and a short range order. "These terms mean," he added, "essentially just what they say: a structure shows long range order if each part fits into a pattern extending through the whole structure, while it shows short range order if each atom is surrounded by neighbors in a regular way, though the regularity may not persist for a very large distance."

This is like saying that a town would exhibit long range order if all its dwellings (as in some older company-owned mining town) were made alike. Short range order, by the same picture, would show a series of what might be called sub-divisions, within which all the dwellings were alike, but differed from region to region.

Advantage of the new concept of order and disorder, said Prof. Slater, is that it permits scientists to discuss mathematically, and predict, phenomena in which the atomic particles are not in equilibrium with one another. Thus the great branch of physics known as thermodynamics is extended to new usefulness, for thermodynamics, highly valuable though it is, can apply only to equilibrium conditions.

And yet in real life and real things like alloys of metals the idealized equilibrium conditions seldom exist. Alloy steel, for example, may be in equilibrium when it is made at high temperatures, but equilibrium may not then exist at room temperatures, where it is used in practical life.

Besides Prof. Slater the following scientists participated in the symposium: Dr. J. G. Kirkwood, Cornell University; Dr. F. C. Nix, Bell Telephone Laboratories; Prof. E. R. Jette, Columbia University; Prof. R. F. Mehl, Carnegie Institute of Technology; Dr. F. Seitz, General Electric Company; Prof. Francis Bitter, Massachusetts Institute of Technology; Prof. L. W. McKeehan, Yale University; and Dr. R. M. Bozorth, Bell Telephone Laboratories.

Science News Letter, July 24, 1937

PHYSICS

Movies With Color, Speed, Depth and Sound Aid Science

MOVIES to the millions mean entertainment. But they are also becoming a most useful tool of science.

As new dimensions of cinemagraphic sight are developed, usually under the primary incentive of making the movies more startling and interesting, scientists apply them to their researches.

Color, now relatively easily obtainable in amateur or 16 mm. film, is allowing operations to be recorded in faithful reproduction and with more fidelity so that future surgeons can study and view repeatedly the best techniques. Flowers, animals and insects, chemical experiments with color reactions and a thousand other happenings are now captured in color as a record and for later study.

Perspective or depth in movies promises to be added to color in the near future. This is accomplished by taking two stereoscopic pictures simultaneously by polarized light of two different orientation and then viewing them with the aid of glasses that sort out one kind of light for one eye and the other for the other.

X-rays have been wedded to the movies. Not only the common variety used in medicine and industry are used

for X-ray movies, but softer rays allow scientists to record the internal workings of creatures too delicate in structure to be caught by the ordinary hard X-rays. An X-ray view of a worm's digestive process was recently filmed at Rochester.

Slow motion pictures allow the dissection of what happens in less than the wink of an eye. High speed cameras with film moving 70 miles per hour and taking 1500 pictures a second (ordinary movies are about 16 per second) are in almost routine use in ballistic and other researches.

And movies, both sound and silent, give psychologists an undisputable way of recording the results of the experiments whether they are on monkeys or babies.

Science News Letter, July 24, 1937

MEDICINE

North Carolina Quintuplets Diagnosed by Use of X-Rays

THE North Carolina quintuplets, prematurely born last November but who died at birth, will go down in medical history as the first quintuplets ever diagnosed as such before birth.

An X-ray picture was taken of the mother when she entered the Duke Hospital, Durham, to have her baby. The film showed four heads and five bodies.

Next day the babies were born and, like the Dionnes, all were girls. Four were normal, and the fifth was a headless freak. Two of the babies survived as long as 30 minutes.

Now physicians throughout the country will for the first time read and argue over this quintuple pregnancy, which brings the total of reported quintuplets in all medical history up to 35.

Once in 40,000,000 births is the expectancy of quintuplets.

Not only were the North Carolina births the first instance of a diagnosis of quintuplets being made prior to delivery, but because the babies died in a hospital it was possible for the physicians to make a complete anatomical study of the fetuses, placenta and membranes.

Drs. E. C. Hamblen, R. D. Baker and G. D. Derieux report the case and their findings. (*Journal, American Medical Association,* July 3.)

What will provoke the most discussion among physicians, upon reading this report, is whether these babies sprang from one egg cell or from several. Were they identical or were they not?

The Duke Hospital doctors are themselves perplexed, after presenting all their findings, but are inclined to the opinion that the five babies may well have been derived from a single ovum.

Science News Letter, July 24, 1937

Pollen from some fruit trees can be kept in cold storage for several years, for use in crossing fruit varieties.

A physician has invented an instrument similar to a stethoscope, with which he can detect simultaneously various body sounds indicating disease conditions.

DENDROLOGY

NATURE RAMBLINGS by Frank Thone

Pedigreed Trees

PEDIGREED cattle graze in the farmer's pasture, pedigreed grains grow in his fields, pedigreed fruits ripen in his orchard. Far removed from Neolithic Europe, or pre-Columbian America, are stock-raising, agriculture, horticulture.

But in the farmer's woodlot are trees no whit different from those his ancestors knew in the foggy forests of Saxony and Britain. Our timber trees are wild trees still, even when we plant and tend them. Alfred or Charlemagne would stare in wonder at what we have done to wheat and hogs in a thousand years—But Adam himself would recognize our oaks and pines unchanged.

It is natural that we should have thus neglected to breed improved timber trees. We domesticated wild animals, crop plants and fruits, only when the wild kinds began to become more difficult to obtain. And we early learned that by increasing size and abundance of yield per unit we could get our daily bread with less work.

But it has been easy to gather wild trees. Vast virgin timber stands still exist, but accessible ones have been badly depeleted.

So we are giving thought to future timber harvests. We still plant wild trees; but breeding for improvement is already being undertaken. Hopeful experiments have been under way for some time in New York, California, and elsewhere.

Newest project is a program of tree genetic and physiological researches provided for by a $615,000 endowment at Harvard University, the Maria Moore Cabot foundation. The terms of acceptance specify that the work must be carried on for at least 50 years. That should provide time enough for even slow-breeding trees to show some good beginnings.

Science News Letter, July 24, 1937

•First Glances at New Books

Additional Reviews On Page 64

Physiology

TAKE CARE OF YOURSELF: A PRACTICAL GUIDE TO HEALTH AND BEAUTY—Jerome W. Ephraim—*Simon and Schuster,* 287 p., $2. A book containing chapters such as "The Sure Way to Check Dandruff and Falling Hair," "The Secret of Buying and Using Cosmetics," "Your Morning Shave and How to Enjoy It," and "Your Hangover and How Not to Have One" is sure to interest a large number of readers. The chapter headings indicate the readability of the book. In addition the advice is sound, based on apparently careful study of the facts. As Dr. Logan Clendening states in his introduction to this volume, the author's statements "stand exactly between the extremes of the advertisers and of the debunkers of cosmetics and drugs."

Science News Letter, July 24, 1937

Chemical Industry

WORLD CHEMICAL DEVELOPMENTS IN 1936—C. C. Concannon and A. H. Swift—*Govt. Print. Off.,* 239 p., 30 c. Survey of world chemical advances as compiled by the Bureau of Foreign and Domestic Commerce of the U. S. Department of Commerce.

Science News Letter, July 24, 1937

Medicine

TEN MILLION AMERICANS HAVE IT!—S. William Becker—*Lippincott,* 220 p., $1.35. Syphilis is the subject of this book. The author, a University of Chicago professor, tells in simple, readable style the facts about the disease, its diagnosis, treatment and transmission. There is no attempt to scare anyone and the most shocking statement is the title. The special emphasis on the public health aspects and social responsibility are a valuable feature of the book.

Science News Letter, July 24, 1937

History-Philosophy

PROGRESS AND CATASTROPHE: AN ANATOMY OF HUMAN ADVENTURE—Stanley Casson—*Harper,* 264 p., illus., $2.75. The author conceives that he renders a service if he dispels a little "easy optimism" by demonstrating "that progress is intermittent and that retrogression is a movement as recurrent as progress." To do so, he reviews the kingdoms that have risen and waned, from Sumer to Now, and endeavors to analyze the factors leading to their downfall.

Science News Letter, July 24, 1937

General Science

CONTROLLED READING, A CORRELATION OF DIAGNOSTIC, TEACHING, AND CORRECTIVE TECHNIQUES—Earl A. Taylor—*Univ. Chicago,* 367 p., illus., $3.50. Increased educational attention to the first of the Three R's, Reading, necessitated by social demands, has stimulated much research on diagnosis and correction of reading defects. This book describes the research, the investigators themselves, and the results obtained.

Science News Letter, July 24, 1937

Philosophy

SCIENTIFIC INFERENCE—Harold Jeffreys—*Cambridge (Macmillan),* 272 p., $3.25. This work, which first appeared in 1931 and is now reissued with additions, has to do with the chief guiding principles of both scientific and everyday knowledge; that it is possible to learn from experience and to make inferences from it beyond the data directly known by sensation. It therefore deals illuminatingly with the very foundations of science.

Science News Letter, July 24, 1937

Anthropology

PUBLICATIONS OF THE PHILADELPHIA ANTHROPOLOGICAL SOCIETY; VOL. I; TWENTY-FIFTH ANNIVERSARY STUDIES—D. S. Davidson, ed.—*Univ. of Pennsylvania,* 235 p., illus., $2.50. Eighteen papers on subjects ranging from "Gods and heroes on Maya Monuments" to "Cross-Cousin Marriage in the Lake Winnipeg Area."

Science News Letter, July 24, 1937

Domestic Appliances

MODERN DOMESTIC SCIENTIFIC APPLIANCES—Charles R. Darling—*E. and F. N. Spon, London (Chemical Publishing Co. of N. Y.),* 160 p., $1. A British book summarizing gas, coal, oil and electrical appliances in the home including their construction, initial cost and cost of operation.

Science News Letter, July 24, 1937

Photography

CAMERA AROUND THE WORLD—Heyworth Campbell, ed.—*McBride,* 128 p., illus., $3. Striking scenes from many lands make this album a pictorial travelogue.

Science News Letter, July 24, 1937

Archaeology

THE CHACO CANYON AND ITS MONUMENTS—Edgar L. Hewett—*University of New Mexico Press,* 234 p., illus., $2.50. A non-technical book on the group of Indian ruins in one particularly interesting canyon of the Southwest. Dr. Hewett discusses excavations, and shows how tree ring chronology, ceramics, and other archaeological aids are constructing the story of these prehistoric towns.

Science News Letter, July 24, 1937

Anthropology

SURINAME FOLK-LORE — Melville J. Herskovits and Frances S. Herskovits, with transcriptions of Suriname songs and musicological analysis by M. Kolinski—*Columbia Univ. Press,* 766 p., $5. The scholarly and detailed report of field work carried on in Dutch Guiana, South America, among the coastal Negroes and the Bush-Negroes.

Science News Letter, July 24, 1937

Archaeology

THE ARMOR OF GALIOT DE GENOUILHAC—Stephen V. Grancsay—*Metropolitan Museum of Art,* 37 p., XXVII plates, $2.50. A detailed description and study of a particularly fine suit of gilded armor, worn in the sixteenth century by a French high official. It shows admirably the care, artistry and efficiency expended to equip a fighting man with a first-class harness.

Science News Letter, July 24, 1937

•First Glances at New Books

Additional Reviews On Page 63

Agricultural Economics

RURAL TRENDS IN DEPRESSION YEARS: A SURVEY OF VILLAGE-CENTERED AGRICULTURAL COMMUNITIES, 1930-1936—Edmund deS. Brunner and Irving Lorge—*Columbia Univ. Press*, 387 p., $3.25. More history has been going on in American agriculture during the past half-dozen years than usually happens in a century, and not much of it has yet got itself into books. This book sifts out pertinent and connected facts from the welter of current ephemeral news, binds them together into proper chronicles of such things as the A.A.A. and its soil-conserving successor-policy, cooperatives, relief, education, religion—the whole complex culture of American rural life and its reactions under severe strain.

Science News Letter, July 24, 1937

Child Care

STATE ADMINISTRATION OF CHILD WELFARE IN ILLINOIS—Elizabeth Hayward Milchrist—*Univ. of Chicago*, 130 p., 75 c.

Science News Letter, July 24, 1937

Science

THE UNIVERSE SURVEYED: PHYSICS, CHEMISTRY, ASTRONOMY, GEOLOGY—Harold Richards—*Van Nostrand*, 722 p., illus., $3.50. A lucidly written account of the physical and earth sciences, which would be helpful to those who want to know what it is all about. It is suitable as a text for the junior college or freshman year course designed to give a general introduction to the physical sciences.

Science News Letter, July 24, 1937

Chemical Industry—Labor

REDUCTION OF HOURS OF WORK IN THE CHEMICAL INDUSTRY: REPORT V, 174 p., $1.; REDUCTION OF HOURS OF WORK IN PRINTING AND KINDRED TRADES; REDUCTION OF HOURS OF WORK IN THE CHEMICAL INDUSTRY: REPORTS IV AND V(APPENDIX), 57 p., 30 c.—International Labour Conference, Twenty-third session, Geneva, 1937—*International Labour Office, Geneva*; obtainable from Mr. L. Magnusson, 734 Jackson Place, Washington, D. C.

Science News Letter, July 24, 1937

Archaeology

GLAZED TILES FROM A PALACE OF RAMESSES II AT KANTIR—William C. Hayes—*Metropolitan Museum of Art*, 46 p., XIII plates, $2. A report on decorations of a palace, believed to be that mentioned in Bible stories of Israelite encounters with Pharaoh. The palace ruins have not yet been identified, but finds from Kantir show that it was frequented by nearly all rulers throughout the Ramesside period. The Metropolitan Museum is now publishing such papers as this separately, rather than in the former fashion of grouping them in Metropolitan Museum Studies.

Science News Letter, July 24, 1937

Law—Traffic

THE LAW OF ACCIDENTS: A TEXTBOOK IN DIGEST FORM—Milton C. Jacobs—*Prentice-Hall*, 886 p., $7.50. Indicative of the complexity of the traffic accident problem and highway collision is this book in "digest" form which contains nearly 900 pages.

Science News Letter, July 24, 1937

Physics

NOUVELLES RECHERCHES SUR LA LUMIÈRE—Louis De Broglie—*Hermann & Cie, Paris*, 55 p., 12 fr.

Science News Letter, July 24, 1937

Chemistry

POUVOIR ROTATOIRE DES IONS DE L'ACIDE D-GLUTAMIQUE—V. A. Pertzoff—*Imprimerie de la Charité (Pierre-Rouge), Librairie Coulet, Dubois et Poulain, Succrs., Montpellier, France*, 171 p., 25 fr.

Science News Letter, July 24, 1937

Physics

L' ÉMISSION DES RAYONS ALPHA A TRAVERS UNE DOUBLE BARRIÈRE DE POTENTIEL—Théodore Kahan—*Hermann & Cie, Paris*, 29 p., 12 fr.

Science News Letter, July 24, 1937

Industrial Chemistry

INDUSTRIAL COLD ADHESIVES: A PRACTICAL HANDBOOK FOR THE MAKER AND USER—Roger Dulac, English edition by Joseph L. Rosenbaum—*Charles Griffin, London (Lippincott)*, 193 p., $3.50. A British compilation of the published literature on industrial cold adhesives now being manufactured. The adhesives include the starches, sugars and glues. The book is written "by an industrialist for other industrialists" to bring order out of widely scattered information.

Science News Letter, July 24, 1937

Psychology

THE NATURE OF HUMAN NATURE AND OTHER ESSAYS IN SOCIAL PSYCHOLOGY—Ellsworth Faris—*McGraw-Hill*, 370 p., $3.50. A collection into attractive book form of scattered writings of the professor of sociology at the University of Chicago.

Science News Letter, July 24, 1937

Archaeology

YUCATAN, BEFORE AND AFTER THE CONQUEST—Friar Diego de Landa; Trans. with notes by William Gates—*The Maya Society*, 162 p., illus., limited ed. of 60 copies, $35. Dedicated to Lazaro Cardenas, this is the first complete English translation of the work of Friar Diego de Landa. It has been annotated entirely from original and in many cases unpublished sources. The author's illustrations and maps add much to the attractiveness of the volume, which is the first book published by the new press of the Maya Society.

Science News Letter, July 24, 1937

Physics

CINÉTIQUE DES RÉACTIONS NUCLEAIRES—G. Gamow—*Hermann & Cie, Paris*, 21 p., 8 fr.

Science News Letter, July 24, 1937

Photography

NIGHT PHOTOGRAPHY WITH THE MINIATURE CAMERA—Kip Ross—*Fomo*, 68 p., illus., 75 c. Fast films, fast lenses, and new ideas as to what cameras can do combine to make after sundown the time for picture taking. Here's how.

Science News Letter, July 24, 1937

Psychiatry

A MIND MISLAID—Henry Collins Brown—*Dutton*, 219 p., $2. See SNL, June 26, p. 407.

Science News Letter, July 24, 1937

Cartography

MAP MAKING—Frank Debenham—*Mill*, 239 p., illus., $2. This book is subtitled "Surveying for the Amateur"; but it should really make its claim a little more ambitious than that. It offers the forester, the farmer, the field naturalist, anybody whose job or serious pleasure is outdoors, an opportunity to learn rudiments of map-making which will greatly increase the value of his results and the effectiveness of their presentation.

Science News Letter, July 24, 1937

Economic Geology

INDIA'S MINERAL WEALTH: A GUIDE TO THE OCCURRENCES AND ECONOMICS OF THE USEFUL MINERALS OF THE INDIAN EMPIRE—J. Coggin Brown—*Oxford*, 335 p., illus., $5. A book for the serious student, and no less for any one whose economic interests touch India. It is very thorough and detailed in its presentation, taking up principal regions, dividing them into their sub-districts, and discussing the resources of each.

Science News Letter, July 24, 1937